



European Strategy Forum
on Research Infrastructures



University of Ljubljana
Faculty of Social Sciences

Cooperation of ESFRI Research Infrastructures (Landmarks) with Industry Report 2022 June 2023

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1 Introduction: why a need to assess the cooperation of Research Infrastructures with industry

The establishment of research infrastructures (RIs) at the European level can be assessed as one of the more important achievements in the process of establishment of ERA. While the basic mission of RIs is undisputable, the accessibility and the level of cooperation with industry (or to use a broader term, economy) is less clearly defined and monitored. In view of the new tasks for the RI, envisaged both in the Pact for Research and Innovation in Europe (EC, 2021) and the ERA Policy Agenda (2021), it is necessary to assess the level of cooperation of RIs with industry and identify the issues related to this cooperation.

With this in mind, we prepared a report on cooperation, based on analysis of the existing documents, in which the mission and the legal framework of RI is described to see, how the cooperation is being framed. Next step was the elaboration of the survey, which was first prepared only for ERICs, but later extended to all the Landmarks. The ambition of the survey was to find out from the RIs, what the level of their cooperation with industry is, what kind of format this cooperation takes and how important segment of their activities the cooperation with industry represents. A special part of the survey focused on the issues identified by the Landmarks as problematic in the cooperation and to which, in their opinion, more attention in the RI policy should be devoted. We summarised the replies in a special chapter and used them in the elaboration of suggested policy recommendations.

Strategic analysis of the European Research Infrastructure landscape is one of the outcomes planned under the **Action 8: Strengthen sustainability, accessibility, and resilience of RIs in the ERA**¹. No doubt a part of such an analysis needs to be a survey on the cooperation of RIs with industry. Also, intensified debate on the need to establish technology infrastructures (TIs) requires a clear input from ESFRI to prevent on a timely basis any overlaps in the activities of the two types of the infrastructures and clearly define the role of each and the space for their cooperation. The costs of establishing a research infrastructure are in most cases significant. EU member states do not have unlimited pool of resources, neither financial nor human, so a careful mapping is needed of what is being available for industry within the existing RIs and where gaps still exist which need to fill by either TIs or RIs. This is also the optimal way to implement the recommendation of the EU Council from 2021²: Research infrastructures should “... improve their connection and interaction with technology infrastructures and industry to increase their impact.”

In the Commission Staff WP³ on Long-term Sustainability of Research Infrastructures, the following statement can be found: “The current framework for interaction with industry is not

¹ EUROPEAN RESEARCH AREA POLICY AGENDA: Overview of actions for the period 2022-2025; p.11

² COUNCIL RECOMMENDATION on a Pact for Research and Innovation in Europe, Brussels, 19 November 2021; 13701/21

³ COMMISSION STAFF WORKING DOCUMENT Long-term Sustainability of Research Infrastructures

ideal and both RI and industry do not fully perceive the reciprocal potential benefits of proactively engaging in collaboration.” One of the ambitions of this Report is to identify potential policy actions needed to increase the mutual benefits of the cooperation for both, the RIs as well as the industry. Even though the main focus of RIs is to perform curiosity-driven fundamental research and achieve scientific excellence, they have a significant innovation potential as well. The industry can play a role of supplier of the needed technology, as the user of the equipment as well as of the services of RIs’ staff, and as a partner in the joint research projects. As in the case of science-industry cooperation also in the case of RIs and industry cooperation, one of the barriers detected is a different mind-set. The Staff WP (ibid., 2017; p.20-21) thus found out that a problem with “improving the communication on RI impacts is that several RIs have been in the forefront of the test and launch of new services and technological applications, but in most cases, there is no clear association between the scientific results and the commercial applications.”

Previous research on RI cooperation with industry shows that stakeholders have indicated that cooperation is hampered due to different goals and expectations between industrial users and Research Infrastructures on one hand, but also due to the administrative, legal, and fiscal burdens connected to working with Research Infrastructures. Some stakeholders mention that the existing access rules are seen as one of the major bottlenecks for industrial access and there is a perceived need to define access rules which can favour industrial usage. The legislation regulating intellectual property rights is another issue which may present a barrier to cooperation.

There is also evidence that especially in the cases of distributed RIs much cooperation happens at the national level and is not registered at the level of the Landmark. Also, there is a large hidden industrial use performed through academic users of the RIs, who in their own capacity cooperate with partners from industry. By systematically rewarding these services in the scientific career paths of public researchers, additional stimuli for cooperation would be provided.

A need to better understand what RIs have to offer and how they can assist industry as well as economy and society in general is one of the important tasks which seems not to be sufficiently promoted, also through the activities of ESFRI. Through the analysis of the survey conducted among Landmarks, this Report tries to identify potential tools to change the current situation. The Report provided an incentive for the establishment and intensive work of the ESFRI Drafting Group on Industry- Research Infrastructures Cooperation and was used as a background material. The findings of the Report were presented to the ESFRI Forum 2022 in Brno.

2 List of Landmarks in each of the priority areas

Let us start with the definition of the Research Infrastructures as provided at the EU web page⁴:

“Research Infrastructures are facilities that provide resources and services for research communities to conduct research and foster innovation.

They can be used beyond research e.g. for education or public services and they may be single-sited, distributed, or virtual.

They include

- *major scientific equipment or sets of instruments*
- *collections, archives or scientific data*
- *computing systems and communication networks*
- *any other research and innovation infrastructure of a unique nature which is open to external users.”*

As per ESFRI Roadmap 2021, the list of research infrastructures includes, in accordance to the priority domains, the following Landmarks⁵:

Name	Full Name	Type	Domain
<u>PRACE</u>	<u>Partnership for Advanced Computing in Europe</u>	<u>Distributed</u>	Data, Computing and Digital Research
<u>ECCSEL ERIC</u>	<u>European Carbon Dioxide Capture and Storage Laboratory Infrastructure</u>	<u>Distributed</u>	Energy
<u>EU-SOLARIS</u>	<u>European Solar Research Infrastructure for</u>	<u>Distributed</u>	Energy

⁴ [European Research Infrastructures | European Commission \(europa.eu\)](#)

⁵ ESFRI Landmarks are RIs that were implemented, or reached an advanced Implementation Phase. ESFRI Roadmap 2021.

Name	Full Name	Type	Domain
	Concentrated Solar Power		
JHR	Jules Horowitz Reactor	Single-sited	Energy
ACTRIS	Aerosol, Clouds and Trace Gases Research Infrastructure	Distributed	Environment
EISCAT_3D	Next generation European Incoherent Scatter radar system	Single-sited	Environment
EMSO ERIC	European Multidisciplinary Seafloor and water-column Observatory	Distributed	Environment
EPOS ERIC	European Plate Observing System	Distributed	Environment
EURO-ARGO ERIC	European contribution to the international Argo Programme	Distributed	Environment
IAGOS	In-service Aircraft for a Global Observing System	Distributed	Environment
ICOS ERIC	Integrated Carbon Observation System	Distributed	Environment
LifeWatch ERIC	e-Infrastructure for Biodiversity	Distributed	Environment

Name	Full Name	Type	Domain
	and Ecosystem Research		
AnaEE	Analysis and Experimentation on Ecosystems	Distributed	Health and Food
BBMRI ERIC	Biobanking and BioMolecular Resources Research Infrastructure	Distributed	Health and Food
EATRIS ERIC	European Advanced Translational Research Infrastructure in Medicine	Distributed	Health and Food
ECRIN ERIC	European Clinical Research Infrastructure Network	Distributed	Health and Food
ELIXIR	A distributed infrastructure for life-science information	Distributed	Health and Food
EMBRC ERIC	European Marine Biological Resource Centre	Distributed	Health and Food
ERINHA	European Research Infrastructure on Highly Pathogenic Agents	Distributed	Health and Food
EU-OPENSREEN ERIC	European Infrastructure of Open Screening Platforms for	Distributed	Health and Food

Name	Full Name	Type	Domain
	Chemical Biology		
Euro-BioImaging ERIC	European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences	Distributed	Health and Food
INFRAFRONTIER	European Research Infrastructure for the generation, phenotyping, archiving and distribution of mouse disease models	Distributed	Health and Food
INSTRUCT ERIC	Integrated Structural Biology Infrastructure	Distributed	Health and Food
MIRRI	Microbial Resource Research Infrastructure	Distributed	Health and Food
CTA	Cherenkov Telescope Array	Single-sited	Physical Science and Engineering
ELI ERIC	Extreme Light Infrastructure	Distributed	Physical Science and Engineering
ELT	Extremely Large Telescope	Single-sited	Physical Science and Engineering
EMFL	European Magnetic Field Laboratory	Distributed	Physical Science and Engineering

Name	Full Name	Type	Domain
ESRF EBS	European Synchrotron Radiation Facility Extremely Brilliant Source	Single-sited	Physical Science and Engineering
European Spallation Source ERIC	European Spallation Source	Single-sited	Physical Science and Engineering
European XFEL	European X-Ray Free-Electron Laser Facility	Single-sited	Physical Science and Engineering
FAIR	Facility for Antiproton and Ion Research	Single-sited	Physical Science and Engineering
HL-LHC	High-Luminosity Large Hadron Collider	Single-sited	Physical Science and Engineering
ILL	Institut Max von Laue - Paul Langevin	Single-sited	Physical Science and Engineering
SKAO	Square Kilometre Array Observatory	Single-sited	Physical Science and Engineering
SPIRAL₂	Système de Production d'Ions Radioactifs en Ligne de 2e génération	Single-sited	Physical Science and Engineering
CESSDA ERIC	Consortium of European Social Science Data Archives	Distributed	Social and Cultural Innovation
CLARIN ERIC	Common Language Resources and	Distributed	Social and Cultural Innovation

Name	Full Name	Type	Domain
	Technology Infrastructure		
DARIAH ERIC	Digital Research Infrastructure for the Arts and Humanities	Distributed	Social and Cultural Innovation
ESS ERIC	European Social Survey	Distributed	Social and Cultural Innovation
SHARE ERIC	Survey of Health, Ageing and Retirement in Europe	Distributed	Social and Cultural Innovation

Until the next ESFRI Roadmap the situation is likely to change significantly, as already the existing Roadmap lists as many as 22 projects aspiring to develop into a Landmark. This suggests that additional opportunities are likely to develop for strengthening cooperation with industry in the future, so removing the barriers to such cooperation and setting clear rules as well as promotion system is essential.

3 Legal framework for the work of European Research Infrastructure Consortium (ERIC)

Initially, the plan was to include in the survey only European Research Infrastructure Consortia (ERICs). While we have decided to include all the Landmarks into the survey, we still wanted to take a closer look at whether the most developed regulation, related to RIs, is applicable for all the Landmarks. But since the detailed regulation is adopted for the ERICs, it seems important to examine the legal framework for this type of RI.

The research infrastructure to be established by an ERIC shall meet the following requirements:

- (a) it is necessary for the carrying out of European research programmes and projects, including for the efficient execution of Community research, technological development and demonstration programmes;
- b) it represents an added value in the strengthening and structuring of the European Research Area (ERA) and a significant improvement in the relevant scientific and technological fields at the international level;

(c) effective access, in accordance with the rules established in its Statutes, is granted to the European research community, composed of researchers from Member States and from associated countries;

(d) it contributes to the mobility of knowledge and/or researchers within the ERA and increases the use of intellectual potential throughout Europe; and

(e) it contributes to the dissemination and optimisation of the results of activities in Community research, technological development and demonstration.

The specific legal framework for the establishment and the functioning of ERIC is provided in the Official Journal of the European Union (08/08/2009)⁶. Several articles regulate the relations with industry, but our understanding is that the cooperation is not restricted, only subject to special provisions.

In the Introduction part, especially the **Article 8** states:

“An ERIC set up under this Regulation should have as its principal task the establishment and operation of a research infrastructure on a non-economic basis and should devote most of its resources to this principal task. In order to promote innovation and knowledge and technology transfer, the ERIC should be allowed to carry out some limited economic activities if they are closely related to its principal task and they do not jeopardise its achievement.”

Also, for the purpose of our Report, the **definition** provided in OJ is relevant:

For the purpose of this Regulation, the following definitions shall apply: (a) ‘research infrastructure’ means facilities, resources and related services that are used by the scientific community to conduct top-level research in their respective fields and covers major scientific equipment or sets of instruments; knowledge-based resources such as collections, archives or structures for scientific information; enabling Information and Communications Technology-based infrastructures such as Grid, computing, software and communication, or any other entity of a unique nature essential to achieve excellence in research. Such infrastructures may be ‘single-sited’ or ‘distributed’ (an organised network of resources).

The reason for quoting this definition lies in the newer documents and reports, in which an attempt is made to categorise the RIs according to the TRL level. As we can see from the definitions provided either on the web page of the Commission, discussing RIs, or in the definition provided by the Official Journal, there is no mention of TRL. A closer look at the activities of the RIs provides ample evidence that the span is significantly broader than may be suggested by those, who believe RIs are only to be found in a very basic research level.

⁶ COUNCIL REGULATION (EC) No 723/2009 of 25 June 2009 on the Community legal framework for a European Research Infrastructure Consortium (ERIC); Luxembourg, 25 June 2009; [Council Regulation \(EC\) No 723/2009 of 25 June 2009 on the Community legal framework for a European Research Infrastructure Consortium \(ERIC\) \(europa.eu\)](https://eur-lex.europa.eu/eli/reg/2009/723/2009-06-25/oj)

The Official Journal specifies the tasks of the RI in **Article 3: Task and other activities**

- 1. The principal task of an ERIC shall be to establish and operate a research infrastructure.*
- 2. An ERIC shall pursue its principal task on a noneconomic basis. However, it may carry out limited economic activities, provided that they are closely related to its principal task and that they do not jeopardise the achievement thereof.*
- 3. An ERIC shall record the costs and revenues of its economic activities separately and shall charge market prices for them, or, if these cannot be ascertained, full costs plus a reasonable margin.*

So, one may say, if an ERIC wants to avoid additional burden of recording separately the costs and revenues, they simply close the door to the industry. It can also lead to a downplay of the importance the cooperation may have for both sides. We must be therefore careful in interpreting the results and need to, in further research, complement the survey results with field work – i.e. person to person interviews, to get a clearer picture as to the extent the articles quoted subdue the cooperation.

4 Short description of the development of the survey

A draft questionnaire was prepared by the Slovenian support team to ESFRI Chair. The purpose of the survey was presented by the Chair to several representatives of Landmarks, who were asked to comment the draft and signal any deficiencies or potential misinterpretations. The survey was introduced at the ESFRI Board and comments were invited. The few received were carefully incorporated in the questionnaire.

In the next step, the EC Team, supporting ESFRI, was invited for comments. We acknowledge with thanks their valuable support. They were also kind enough to send to all the listed Landmarks the online questionnaire, with explanation of why we need to collect the data.

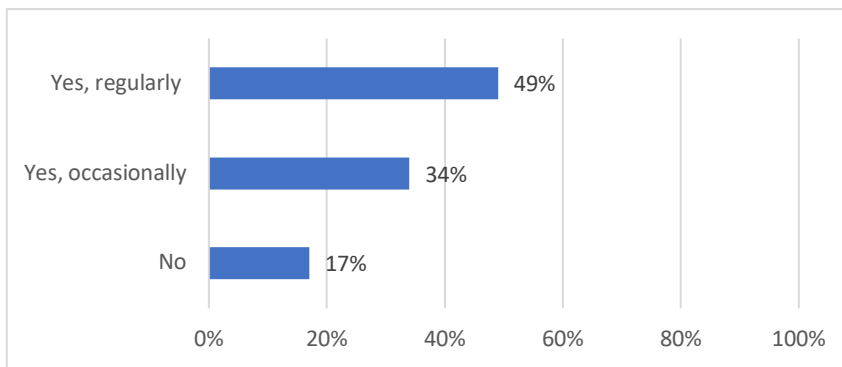
The questionnaire was sent out on 5th May 2022 from the ESFRI secretariat via MOS to all the contact people of Landmarks in ESFRI Roadmap (43).

5 Presentation of the survey on cooperation of Research Infrastructures with industry

5.1 Starting questions

At the beginning of the questionnaire, all respondents⁷ were asked whether they cooperate with industry in any way. The majority of Landmarks, 83%, cooperate with industry in at least one way: 49% regularly cooperate with industry and 34% do so occasionally. Only 17% of the respondents answered that they do not cooperate with the industry.

Picture 1: Cooperation with industry



Question: Does your Landmark in any way cooperate with industry? (n = 35)

Table 1: Cooperation with industry

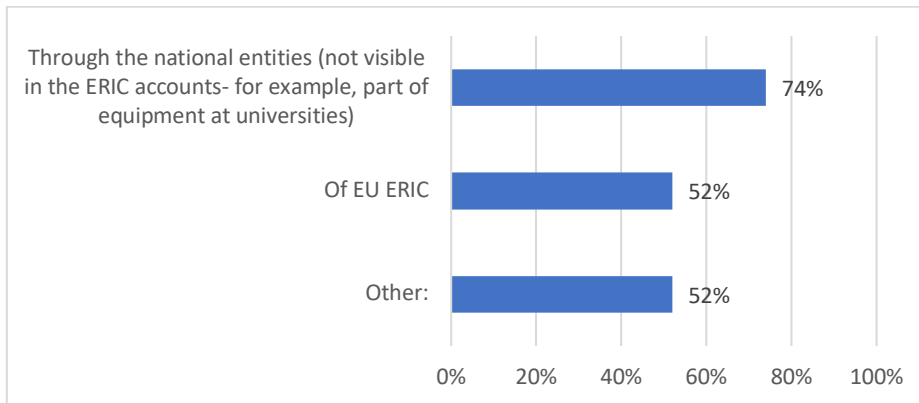
	f	%
Yes, regularly	17	49%
Yes, occasionally	12	34%
No	6	17%
Total	35	100%

Question: Does your Landmark in any way cooperate with industry? (n = 35)

Most, 74%, of the cooperation takes place through national entities (not visible in the ERIC accounts, for example part of the equipment at the universities), followed by cooperation at the level of EU RI, that represents 52%. However, 52% of the landmarks also cooperate with industry on other levels such as regular contacts (calls, meetings, committees, coordinating hubs etc.) or extensive procurement (see the list below).

⁷ Please take into account that some landmarks that responded to the survey were not an ERIC or have not yet been formally established as an ERIC and therefore could not cooperate with industry at the level of EU ERIC by definition.

Picture 2: Level of cooperation with industry



Question: Is this cooperation at the level of ... ? (n = 27) (multiple answers possible)

Table 2: Level of cooperation with industry

	f	%
EU ERIC	14	52%
Through the national entities (not visible in the ERIC accounts – for example, part of equipment at universities)	20	74%
Other	14	52%

Question: Is this cooperation at the level of ... ? (n = 27) (multiple answers possible)

As »other«, the cooperation at the following levels was listed:

- research and development
- programs for SME
- regular contacts through calls or meetings
- regular contacts through member states or facility owners
- involvement in coordinating hubs or industry liaison units
- involvement in EC funded projects
- extensive procurement

5.2 Types of cooperation at the level of ERIC head office

The respondents were asked what type of cooperation they have at the level of ERIC head office, and what is the share of funds (that are reflected in the annual accounts of an ERIC)?

As shown in Table 3, the most common type of cooperation was research cooperation funded through an EC funded project, followed by research cooperation funded through other sources, contract research funded by a company and use of equipment/data. In the category ‘other’, different types of cooperation such as membership fees or sales of advanced instrumentation were mentioned.

Not all the respondents answered that question, but as the Table 3 shows, answer »yes« was more often selected for all listed types of cooperation.

Table 3: Types of cooperation at the level of ERIC head office

	Yes		No	
	n	%	n	%
Research cooperation - funded through an EC funded project	8	80%	2	20%
Research cooperation - funded through other sources	8	73%	3	27%
Contract research (funded by a company)	4	50%	4	50%
Use of the equipment/data	5	71%	2	29%
Other	7	78%	2	22%

Question: What type of cooperation do you have at the level of ERIC head office, and what is the share of funds (reflected in the annual accounts of an ERIC)? (Multiple answers possible)

The respondents were further asked about the share of funds represented at the level of ERIC head office for each type of cooperation with the industry. The share of funds reflected in the annual accounts of an RI varied a lot. It ranged from 4% to 50% for research cooperation funded through an EC funded project; from 1% to 50% for research cooperation funded through other sources; from 0.2 to 20% for contract research funded by a company; from 2% to 52% for use of equipment/data; and from 2% to 76% for other types of cooperation.

As “other” the following types were listed:

- sale of advanced instrumentation
- work with industry to improve technology through EC projects
- memberships
- partnering with industry in EU funded consortia
- in-kind (construction)

The questions on types of cooperation at the level of ERIC head office were answered only by few respondents, so the results need to be interpreted with caution. Moreover, some of the respondents noted that the share of funds that are reflected in the annual accounts of an ERIC is difficult to estimate.

5.3 Types of cooperation at the national level

The respondents were asked what type of cooperation national nodes have, using the same infrastructure, and what is the estimated share of funds that are not reflected in the ERIC accounts.

Not all the respondents answered that question, but as the Table 4 shows, again answer »yes« was more often selected for all listed types of cooperation.

Table 4: Types of cooperation at the national level

	Yes		No	
	n	%	n	%
Research cooperation - funded through an EC funded project	12	92%	1	8%
Research cooperation - funded through other sources	12	92%	1	8%
Contract research (funded by a company)	6	75%	2	25%
Use of the equipment/data	8	89%	1	11%
Other	3	60%	2	40%

Question: What type of cooperation do national nodes have, using the same infrastructure, and what is the estimated share of funds (not reflected in the ERIC accounts)? (Multiple answers possible)

The most often selected answers were Research cooperation – funded through an EC funded project (92%) and Research cooperation – funded through other sources (92%), followed by Use of the equipment/data (89%) and Contract research (funded by a company) (75%).

As “other” the following types of cooperation were listed:

- investments through research projects training
- industrial partnership
- receiving instrumentation from companies.

The respondents were further asked what the share of funds is in each type of cooperation with the industry that is not reflected in the annual accounts of ERIC. The share of funds that is not reflected in the annual accounts of an ERIC varied quite extensively. For instance, research cooperation funded through an EC funded project ranged from 1% to 75% and for research cooperation funded through other sources from 10% to 50%. Only one respondent

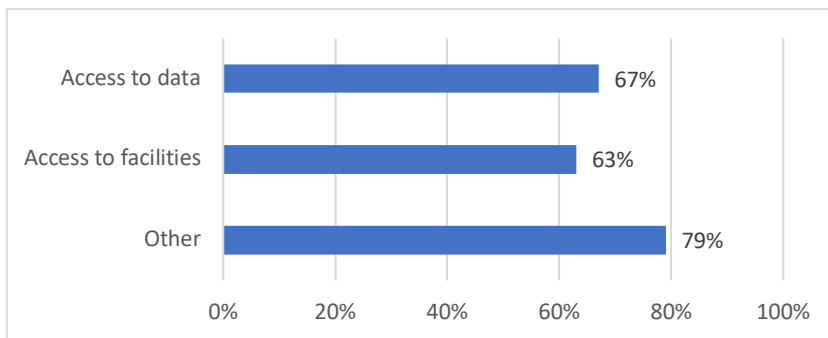
estimated the share for contract research (funded by a company) and the use of equipment/data, the shares were 10% and 5%, respectively.

The question on types of cooperation at the national level was answered only by few respondents, so the results need to be interpreted with caution. Moreover, some of the respondents answered that information on the share of funds was not available.

5.4 Types of services offered

There were 24 respondents who answered the question “What services are offered to the industry?”: 63% of them said that they offered access to facilities to the industry, and 67% offered the industry access to data. Interestingly, 79% of respondents answered that they offered “other” services to the industry, such as training or joint development of instruments (for more detailed description see the list below).

Picture 3: Types of services offered to the industry



Question: What services are offered to the industry? (n = 24) (multiple answers possible)

Table 5: Types of services offered to the industry

	n	%
Access to facilities	15	63%
Access to data	16	67%
Other	19	79%

Question: What services are offered to the industry? (n = 24) (multiple answers possible)

In addition to the access to facilities and access to data the following services were offered to the industry:

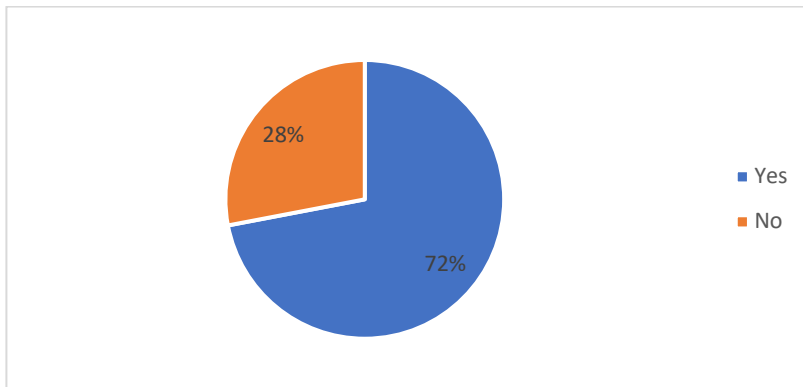
- training and user workshops
- personnel exchange with industry

- interactive sessions
- access to technology (e.g. software, computing facilities)
- access to biological resources
- access to experts, educational trainings
- access to data processing services
- shared technology or instrument development
- sharing information within the networks
- consulting, expertise (scientific, technology)
- providing platforms to engage with stakeholders and users
- co-creation of experiments to develop new observation capability in the applied science.

5.5 Stimulation of cooperation with industry

The majority, i.e. 72% of the respondents said, they systematically stimulate cooperation with industry.

Picture 4: Stimulation of cooperation with industry



Question: Do you systematically stimulate such cooperation? (n = 25)

Table 6: Stimulation of cooperation with industry

	n	%
Yes	18	72%
No	7	28%
Total	25	100%

Question: Do you systematically stimulate such cooperation? (n = 25)

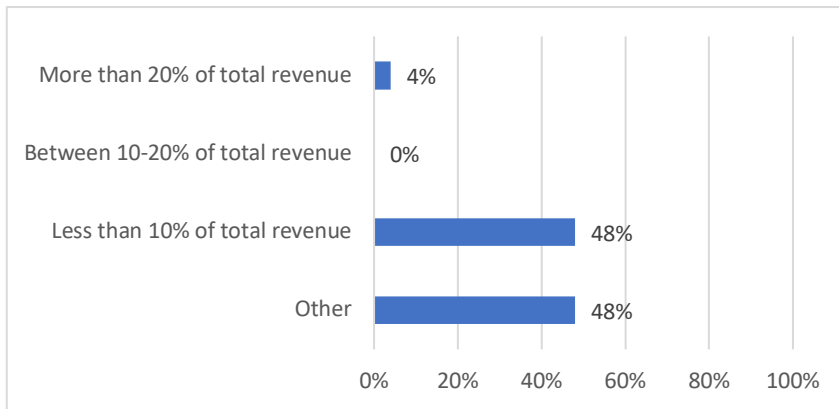
The respondents were further asked, how they stimulate such cooperation. The respondents stimulate cooperation with industry through:

- maintaining contacts with existing and potential industrial partners;
- dedicated offices for business/commercial cooperation within facilities (responsible for outreach, co-development of services, linking EU funding with industry interests etc.);
- involving industrial representatives in advisory boards;
- industrial liaison officers;
- interactions at congresses or conferences relevant to industry;
- participation at workshops;
- participation in EC and other EU funded projects (e.g. SMEs);
- shared training initiatives;
- meetings and brokerage events;
- industry days;
- membership of industrial associations;
- issuing special calls (e.g. call for interest, call for tenders, call for proposals, call for service provision);
- outreach programs and activities targeting potential industrial users;
- offering services (e.g. use of equipment for observation capabilities) via networks of industry stakeholders;
- knowledge exchange (e.g. various schemes for sharing knowledge, presenting RI at industry events or meetings);
- co-innovations plan development;
- encouraging entities from the private sector to participate in the RI events;
- highlighting cooperation on the website;
- funding for small projects aimed at the alignment of services.

5.6 The importance of cooperation with industry at the level of head office

Approximately half, 48%, of the respondents said, that the cooperation with industry financially represents less than 10% of the total revenue, while for 4% it represents more than 20%. The rest replied “other” (see the explanations below).

Picture 5: The importance of cooperation with industry at the level of EU ERIC head office



Question: How important is such cooperation financially for EU ERIC at the level of head office? (n = 22)

Table 7: The importance of cooperation with industry at the level of EU ERIC head office

	n	%
Less than 10% of total revenue	11	48%
Between 10–20% of total revenue	0	0%
More than 20% of total revenue	1	4%
Other	11	48%
Total	23	100%

Question: How important is such cooperation financially for EU ERIC at the level of head office? (n = 22)

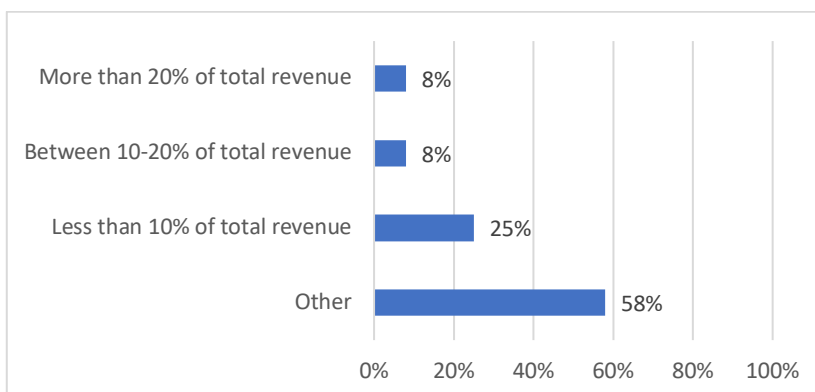
Answers in the “other” category included explanations, such as:

- there is no financial support at the level of head office or that such cooperation has not been implemented yet;
- that they do not use the ERIC legal model;
- that they do not financially depend on funding from industry, although they are applying for EU funding with key industry partners; and
- that it is difficult to estimate without more information on the type of cooperation.

5.7 The importance of cooperation with industry for the national representing entities

For less than one tenth of respondents the cooperation with industry represented more than 20% of total revenue and the share of respondents whose cooperation with industry represented between 10–20% of total revenue was the same. One quarter of respondents responded that cooperation with industry accounts for less than 10% of the total income. The rest of respondents choose the answer “other” (see details below).

Picture 6: The importance of cooperation with industry for the national representing entities



Question: How important is such cooperation financially for the national representing entities of ERIC? (n = 24)

Table 8: The importance of cooperation with industry for the national representing entities

	f	%
Less than 10% of total revenue	6	25%
Between 10–20% of total revenue	2	8%
More than 20% of total revenue	2	8%
Other	14	58%
Total	24	100%

Question: How important is such cooperation financially for the national representing entities? (n = 24)

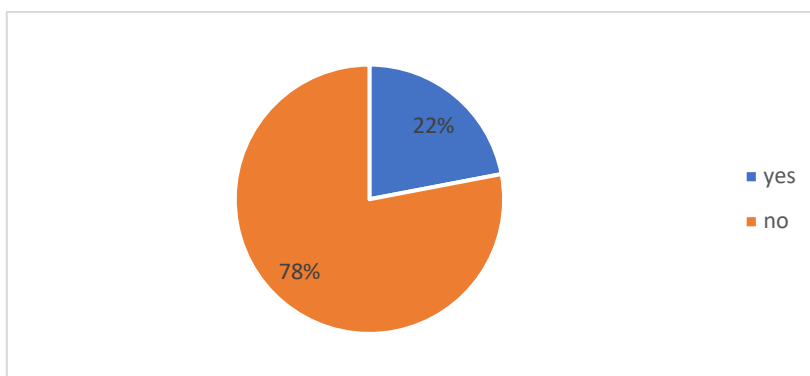
Answers in the “other” category included the following explanations:

- the question was not relevant as their RI was not an ERIC;
- the services offered to the industry are generally free;
- some mentioned that they receive some revenue form industry membership, but that the percentage of total revenue is small;
- some pointed out that it differs within the national nodes; and that the value has not been estimated yet (as the private sector is not the main funding stakeholder);
- this value is not estimated yet, in some nodes could be more that 10% but usually less.

5.8 Co-investment of industry in research equipment of Research Infrastructures

As shown in Picture 7, most respondents stated that industry does not co-invest in the research equipment of RI. Only 14% of the respondents answered that the industry does co-invest in the research equipment of RI.

Picture 7: Co-investment of industry in research equipment of RI



Question: Does industry co-invest in research equipment of RI? (n = 23)

Table 9: Co-investment of industry in research equipment of RI

	n	%
Yes	5	22%
No	18	78%
Total	23	100%

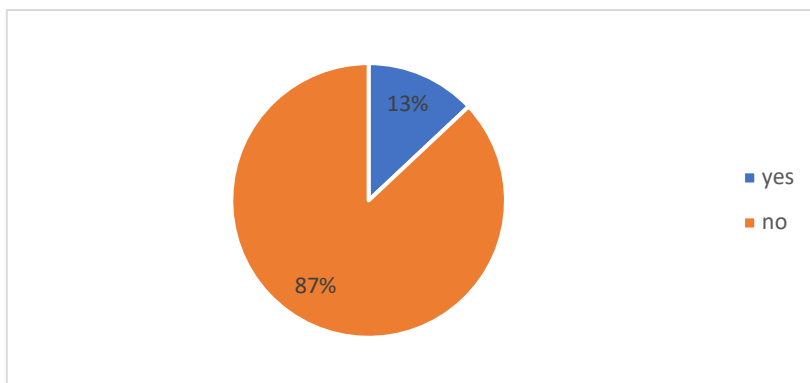
Question: Does industry co-invest in research equipment of RI? (n = 23)

Among the five respondents that answered positively to the previous question, three stated that industry co-invests in the research equipment of RI annually and two that the co-investments occur less often.

5.9 Other direct private investment in the RI

Of the 23 respondents who answered the question, whether there is any other direct private investment in RI, the majority, i.e. 20 (87%), reported, they did not receive any other direct investment in the RI in addition to the ones they have previously mentioned, the remaining three (13%) said that they receive other direct private investment in the RI in terms of usage of software and related services, investment procured through scientific projects, as well as investment in technology via in-kind contributions, both for construction and for specific equipment.

Picture 8: Other direct private investment in the RI



Question: Is there any other direct private investment in RI, in addition to the ones you have already mentioned? (n = 23)

Table 10: Other direct private investment in the RI

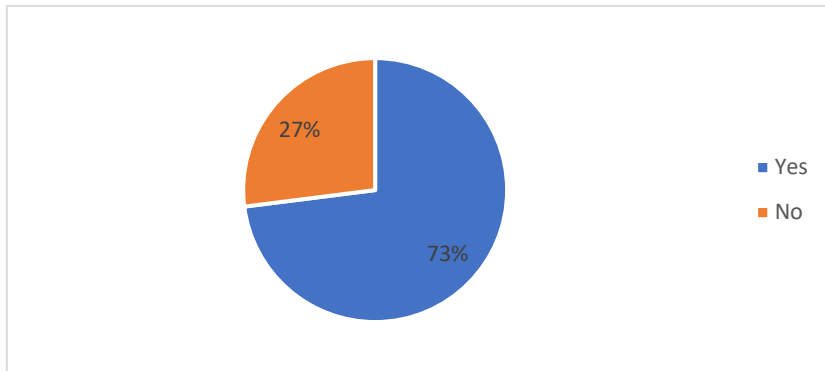
	n	%
Yes	3	13%
No	20	87%
Total	23	100%

Question: Is there any other direct private investment in RI, in addition to the ones you have already mentioned? (n = 23)

5.10 Accessibility of the Research Infrastructures

We have asked the respondents if their institution or equipment or data or services are accessible through initiatives such as test beds, pilot lines, demonstrators, and testing facilities. The majority, i.e. 73% of respondents responded positively, while the rest stated that they do not make their institution, equipment, data or services accessible through such initiatives.

Picture 9: Accessibility of the RI through initiatives such as test beds, pilot lines, demonstrators and testing facilities



Question: Are your institution or equipment or data or services accessible through your access, included in initiatives such as test beds, pilot lines, demonstrators, testing facilities? (n = 22)

Table 11: Accessibility of the RI through initiatives such as test beds, pilot lines, demonstrators and testing facilities

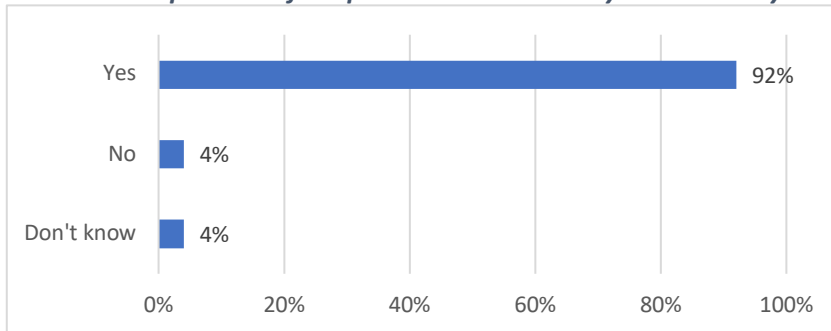
	n	%
Yes	16	73%
No	6	27%
Total	22	100%

Question: Are your institution or equipment, or data or services accessible through your access, included in initiatives such as test beds, pilot lines, demonstrators, testing facilities? (n = 22)

5.11 Plans for further expansion of cooperation with industry

Almost all, i.e., 91% of the respondents stated that they plan to further expand their cooperation with industry within next years, only two (8%) did not know or did not plan to further expand the cooperation with industry.

Picture 10: Expansion of cooperation with industry within next years



Question: Do you plan further expansion of such cooperation with industry within next years (or specific period, like 2021-2027)? (n = 23)

Table 12: Expansion of cooperation with industry within next years

	n	%
Yes	22	92%
No	1	4%
Don't know	1	4%
Total	24	100%

Question: Do you plan further expansion of such cooperation with industry within next years (or specific period, like 2021-2027)? (n = 23)

We asked the RI that do not plan to further expand their cooperation with industry within next years about their reasons for not cooperating with the industry. More than one answer was possible. Their answers were:

- there is no interest from industry
- there is no added value for the industry
- the nature of the RI is such as it does not allow commercial use of data

Some other answers to this question were that their RI is not an ERIC but that it does cooperate with industry via contracts and services; that while they do not cooperate directly

with industry, they facilitate the possibilities to use their facilities by special calls for industry; that ERIC is not yet established, but that the cooperation with industry is planned.

5.12 Other suggestions and opinions with regard to Research Infrastructures' cooperation with industry

The respondents were asked whether they had any other suggestions, questions, or opinions with regard to RIs cooperation with industry. Their suggestions are:

- conduct a study that would explore the perceived attractiveness of the RI services to the private sector (with a focus on potential offers linked to scientific domains)
- find companies potentially interested in developing contacts with the RI communities
- increase the visibility of the services offered by RIs
- an advisory committee established at the RI level could support strategic activities, such as the development of the legal basis for the RI cooperation with the private sector
- appointment of an industry contact officer at the level of the national nodes (where most interactions with private sector happen)
- develop solutions and regulations for cooperation with industry at the level of RIs
- co-creation and co-innovation platforms and avenues should be further explored and facilitated by suitable funding schemes (EU funding to facilitate this form of activity, such as the infra-tech call, has been greatly appreciated by the RIs and the industry partners)
- identify legal and contractual framework and collaboration processes that can be harmonised across distributed sites
- support in developing relevant guidance documents that would further enhance collaboration with industry in the case of distributed RIs
- support for building a larger community across ESFRI RIs of innovation brokers that would be connected with industrial partners
- training for the ICOS
- having EU portal for showcasing the services that are tailored to the industry
- having EU organisation able to present EU RIs collectively as reliable and successful in dealing with the industry
- develop a clear business model for RIs in order to be sustainable and not too dependent on EU funded projects
- offering data in open access
- sharing of good models for setting up co-development and best practices in sustaining cooperation (both with large companies and SMEs)
- the EC could probably contribute by promoting the potential role of RIs
- extra support for SME engagement which should be fully funded via EC/EIC

- extra support to develop sample environments, procedures/services for industry needs
- support for data analysis that go beyond simply doing an experiment and generating data (industry needs such extended support in contrast to academia)
- in-kind as a concept is an interesting way of industry cooperation

The following criticisms/opinions were also noted:

- there are no legal solutions at the EU level for the mutual use of research infrastructures of academia and the private sector
- there are no specific regulations related to cooperation with industry (at least within some RI)
- networking with other academic groups that develop interactions with the private sector would increase the possibilities for building interactions with industry
- for distributed research infrastructures a fully centralised approach to cooperation with industry may not always be applicable, as the nodes are embedded in their own organisation's legal and contractual framework and collaborations may need to be approached on a one-by-one basis (this may sometimes hinder scaling of collaboration)
- it is fundamental to demonstrate to the industry long-term sustainability for building stable and long-lasting relationships
- some RI are very active in collaborating with and supporting industry but do so on the free-of-charge basis (the assumption of the questionnaire seems to be that the collaboration with the industry should be primarily about bringing funding to the infrastructure)
- first mission of RIs is to support research and more indirectly to contribute to societal challenges, but it is often unclear how much emphasis on developing cooperation with industry is expected and why
- the digitalisation of society and the role of AI have brought a lot of potential for new roles of pan-European data services, but data RIs are relatively new and not always very visible for non-academic organisations
- there is a need for a flexible approach to what "publishing" means so work with industry can be at least semi-confidential even if funded via EC support

5.13 Cooperation with Technology Infrastructures

The respondents were asked to identify any of the existing Technology Infrastructures (TI) in their domain with which they already cooperate or plan to cooperate. The RIs already cooperate with the following TIs:

- CEA
- Fraunhofer

- Danish Technological Institute
- Norwegian Research Centre
- EGI
- RISE
- Characterisation platform Nanoelec IRT

Local Battery Hub, VTT, DEA, Fraunhofer, FORCE and IMEC were listed as the existing TIs with which the RIs plan or would like to cooperate in the future. Some mentioned that cooperation with TIs could be an interesting opportunity.

Furthermore, the respondents were asked whether they could identify any need to establish new TIs in their domain. Out of eight respondents, that answered this question, more than half did not express the need to establish new TIs in their domain or at least not yet. Some further stipulated that the added value of TIs in their domain is unclear. Only two respondents felt that they would benefit from establishing new TIs in their domain

In the final question the respondents were asked for comments with regard to TI. The majority of respondents believe that further discussion is needed as the positive effects of creating TIs are unclear. Only one respondent felt that TIs should be encouraged. Their comments are summarised below:

- TIs would improve EU industrial competitiveness
- TIs are interesting for the industry and should be encouraged
- The added value of TIs is questionable
- There are concerns that creating a binary definition of RI and TI will make an artificial barrier in the transversal research and innovation pipeline that does not exist
- TIs are currently not relevant for certain RIs
- There is a pressing need to better define TIs as well as understand the activities of the various research and development performing organisations and create definitions for RIs and TIs that reflect reality (therefore a comprehensive activity mapping exercise should be undertaken before a final definition is formulated)
- Some distributed RIs already have TIs as participating institutions, providing RD&I services to the RI user communities
- Careful consideration of effects of policy measures related to the creation of TIs – intended and unintended – must be undertaken, or there is a risk of reducing instead of increasing innovation efficiency

Other comments/suggestions

- Since the cooperation with industry is organised and followed at the national level by CNRS and CEA, they should be the ones to identify a need for new structures like TIs
- We support the establishment of an advisory board to ensure smooth and coherent development of policy actions related to TIs, and suggest that there are two seats for

EU RIs, thereby covering the different types of RIs to be represented (one from ERIC forum and the other from EIRO/ERF)

- RIs very often conduct high TRL development and validation, and TIs conduct also lower TRL level research
- Industry is generally ready to engage, the RIs just need to reach out.

Since not all the respondents answered the questions on cooperation with TIs, the results need to be interpreted with caution, yet some of the messages are highly relevant for the future development of RIs as well as TIs.

6 A closer look at selected European Research Infrastructure Consortia

To complement the survey, analysed in the previous chapter, we present concrete examples of cooperation with industry of one RI from each of the five domains: energy; environment; health and food; physical sciences and engineering and social and cultural innovation. The RI was chosen at random from each domain, and description is based on an overview of the types of RIs and their cooperative arrangements with industry as they are presented on their webpages and in their annual reports. The five selected RIs are: the Energy Conservation through Community Solutions and Engagement Laboratory (ECCSEL) in the domain of energy; the European Marine Biological Resource Centre (EMBRC) in the domain of the environment; the European Association of Technology Transfer Offices (EATRIS) in the domain of health and food; the Centre for Research and Innovation in the Cultural and Creative Industries (CERIC) in the domain of social and cultural innovation; and the Consortium of Social Science Data Archives (CESSDA) in the domain of data and information management. Each RI is briefly described, with a focus on information related to their cooperation with industry, since this is the main topic of our research.

6.1 Energy Conservation through Community Solutions and Engagement Laboratory

Energy Conservation through Community Solutions and Engagement Laboratory⁸ (ECCSEL) is the European Research Infrastructure for CO₂ Capture, Utilisation, Transport and Storage (CCUS). ECCSEL ERIC is a distributed, integrated research infrastructure encompassing interlinked transnational scientific facilities and national nodes. ECCSEL has been on the ESFRI Roadmap since 2008 and is since 2018 acknowledged as an ESFRI Landmark. The goal of ECCSEL is to enable low to zero CO₂ emissions from industry and power generation to combat climate change, while also enhance European science, technology development, innovation and education in the field of CCUS. Currently (June 2022), over 80 individual research facilities are part of the ECCSEL ERIC RI and are located in 5 countries (France, Norway, Italy, The Netherlands and United Kingdom) and are owned by 23 different facility operators. The number of countries, operators and facilities is expected to increase over time. The research infrastructure also reaches out to relevant industry and research communities to determine whether their research infrastructure needs to enable full-scale deployment of CCUS in Europe.

6.1.1 Cooperation with industry and other entities

ECCSEL offers open access to over 80 CCUS research facilities across Europe. Research facilities across the CCUS value chain are covered through ECCSEL.

ECCSEL is a distributed RI, which means that most of its projects and collaborations take place at the national level. Since the goal of ECCSEL is to enable low to zero CO₂ emissions from

⁸ See <https://www.eccsel.org/>.

industry and power generation to combat climate change, the RI is involved in several successful projects that include the cooperation with industry. Examples from the Italian, French and Norwegian nodes are described below⁹.

The Italian node runs several projects that involve collaboration with industry or other private for-profit entities: ECCSELERATE project¹⁰; IPANEMA project¹¹; and CLEANKER project¹².

- ECCSELERATE project started in January 2020, including National Institute of Oceanography and Applied Geophysics OGS and Sustainable Energy Research Centre Sotacarbo as project partners and ENEA and the University of Bologna (DICAM) as third parties. Its activities include among others: capacity building, industry engagement, national node implementation, facilities implementation plan, transnational access.
- The IPANEMA project (or Implementation of Panarea Natural Laboratory of ECCSEL and Marine Observatory) is dedicated to the implementation of the Panarea NatLab and CTMO ECCSEL facilities, with new and innovative equipment.
- The CLEANKER project aims at demonstrating at TRL7 the Calcium Looping (CaL) concept, one of the most promising technologies for CO₂ capture in cement plants, in a configuration highly integrated with the cement production process, making use of entrained flow reactors.

The French node (ECCSEL-FR) has been officially constituted and structured around four public research institutes (The French national radioactive waste management agency, IFP Energies nouvelles, National competence centre for Industrial Safety and Environmental Protection, Bureau de Recherches Géologiques et Minières) and two private companies (EDF Group, TOTAL). The French node strives to increase the visibility of all ECCSEL research facilities and foster their use. Only in 2020 it participated in the following events:

- Back2Business event organised by Pôle AVENIA;
- AXELERA technical day on the utilisation of CO₂;
- Dunkirk & online: European conference “CO₂, Industries and Territories”;
- DEEPSURF Seminar " Carbon storage";
- Conference “CO₂: Waste or Raw Material of the Future?”;
- “Les Rendez-vous Carnot 2020”, a national business convention at which companies with innovation needs have the opportunity to meet R&D providers. There was an ECCSEL booth in the ‘Village of research infrastructures’ and B2B meetings were organised.

The Norwegian node of ECCSEL consists currently of three research institutes and one university: Norwegian University of Science and Technology (NTNU), SINTEF Industry (merger

⁹ For more detailed description see the annual report <https://www.eccsel.org/media/112578/eccsel-eric-annual-report-2020-v6a.pdf>.

¹⁰ See also <https://cordis.europa.eu/project/id/871143>.

¹¹ See the annual report <https://www.eccsel.org/media/112578/eccsel-eric-annual-report-2020-v6a.pdf>.

¹² See also <https://cordis.europa.eu/project/id/764816>.

of former SINTEF Materials and Chemistry and SINTEF Petroleum), SINTEF Energy Research, Institute for Energy Technology (IFE). ECCSEL-Norway is working to expand and attract additional Norwegian universities, research institutes and the industry through national meetings/workshops and research project collaboration. Listed below are some examples of past or current cooperation of RI with industry.

- The ECCSELERATE project in which ECCSEL-Norway is linked with NTNU, SINTEF Energy Research and SINTEF AS as project partners and IFE as third party.
- The ECCSEL facilities in SINTEF Industry have played a crucial role in implementation of several national and European research and innovation projects.
- Norwegian CCS Research Centre remains an important engine for CO₂ capture, transport and storage (CCS) research in Norway. SINTEF Energy Research also offers multiple ECCSEL facilities utilised in NCCS, e.g. NO2.3 CO2MIX - VLE, NO2.6 VISC-DENS, NO2.5 DEPRESS, NO2.4 SEPPIL.

A brief description of the national nodes shows that ECCSELERATE project is particularly important for fostering and strengthening ties with industry. One of the key tasks of the ECCSELERATE project is to optimise services provided by ECCSEL ERIC to its stakeholders and industrial and scientific user groups through planned dialogues with targeted industrial sectors and the research community. To this end:

- industrial research needs are identified and a tailor-made portfolio of research and technology development services for CCS to actively engage industry and academia and develop a tailored marketing strategy for industry is being devised;
- the potential extension of ECCSEL's scope to CO₂ re-use is being evaluated;
- a service model (a tailor-made compilation of access services) based on the updated ECCSEL ERIC Research Priorities, that addresses the research needs of stakeholders and user groups, is being established.

The emphasis on strengthening the cooperation with industry is also visible from the first ECCSELERATE Transnational Access call that was explicitly dedicated to researchers from industry and SMEs, offering free access to ECCSEL ERIC research facilities.

Among projects that are important for fostering and strengthening ECCSEL's cooperation with industry, Storage Research Infrastructure Eco-System¹³ (StoRIES) is also worth mentioning. The main objectives of StoRIES are linked to the energy storage development by providing access to world-class research infrastructures and services. StoRIES will establish an ecosystem with international peer partners from research and industry to foster open science and promote new energy technology standards.

¹³ See <https://www.storiesproject.eu/>.

6.1.2 Summary

The European Research Infrastructure for CO₂ Capture, Utilisation, Transport and Storage (CCUS) is a distributed, integrated research infrastructure encompassing interlinked transnational scientific facilities and national nodes. ECCSEL has a well-defined process for cooperation with industry. It readily approaches industry to become a partner in the project. Industry then sometimes provides funding or in-kind support to the project, and the project is executed by ECCSEL and its research partners. The Italian, French and Norwegian nodes of ECCSEL have all collaborated with industry in various ways. The private sector is actively involved in ECCSEL research and development projects. Industry partners have access to ECCSEL facilities and contribute their expertise to the development of new technologies. A good example is the ECCSELERATE project one of the key tasks of which is to optimise services provided by ECCSELERATE to its stakeholders and industrial and scientific user groups through planned dialogues with targeted industrial sectors and the research community.

6.2 The European Marine Biological Resource Centre

The European Marine Biological Resource Centre¹⁴ (EMBRC) is a distributed RI. It was established to advance fundamental and applied marine biology and ecology research – while promoting the development of blue biotechnologies. This is achieved by enabling access to services, facilities, and technology platforms in its 45 marine stations in 9 countries (Belgium, France, Greece, Israel, Italy, Norway, Portugal, Spain, United Kingdom) in support of robust, cost-effective and efficient research. EMBRC has been part of the [European Strategy Forum on Research Infrastructures \(ESFRI\) roadmap](#) since 2008. In 2018, it was designated an ‘ESFRI Landmark’ on the 2018 ESFRI [Roadmap](#). Also in 2018, it was awarded the legal status of a European Research Infrastructure Consortium (ERIC). EMBRC’s purpose is to: provide access to marine biological organisms and their habitats for experimental purposes and applied research; promote the sustainable use of marine resources; deepen fundamental knowledge on marine organisms and their role in the environment, pushing the frontiers of science; explore marine biodiversity for new products, inspiration, and innovation; promote the use of marine experimental models in mainstream science.

6.2.1 Cooperation with industry and other entities

EMBRC¹⁵ is supporting industry stakeholders to achieve success and meet changing new research needs and expectations very much in the same way they do with academic users. They provide experimental facilities, data and expertise for early-stage basic research, applied industrial research and for testing innovative developments and products. In addition, EMBRC offers industry stakeholders training opportunities and exchange programmes.

¹⁴ See <https://www.embrc.eu/>.

¹⁵ See the annual report <https://www.embrc.eu/sites/default/files/publications/2020%20annual%20report%20FINAL%20web.pdf>.

EMBRC works across a wide range of research areas and with diverse stakeholders, including academia, industry, technology, and education. For example, ASSEMBLE Plus provides scientists from academia, industry and policy with a quality-assured program of Transnational Access and Virtual Access to EMBRC services. And The RI-VIS¹⁶ project aims to increase the visibility of European RIs to broader scientific communities, industry and strategic partners in third countries by targeting communities and stakeholders with current and precise information and matching them with RIs to facilitate the development of new collaborations, user accessibility, collaborative and innovative actions, funding opportunities, knowledge transfer and training opportunities.

Moreover, national nodes are involved in several activities that relate to the cooperation with industry. For example, EMBRC Belgium organised several meetings with the industry in 2020 and participated in various research projects in collaboration with industry.

However, EMBRC acknowledges that the cooperation with industry could be better developed and that a change in approach is required to convince industry to use the services of marine stations and related research institutes. Especially, communication will need to take into account factors that are important to the industrial sector such as discretion, full retention of intellectual property (IP), flexibility, cost effectiveness, competitive advantage and tailormade approaches, accompanied by a concerted strategy for industrial engagement.

6.2.2 Summary

The European Marine Biological Resource Centre (EMBRC) is a consortium of marine research institutions with the goal of advancing fundamental and applied marine biology and ecology research. EMBRC provides experimental facilities, data and expertise for early-stage basic research, applied industrial research and for testing innovative developments and products. EMBRC offers industry stakeholders training opportunities and exchange programs. However, the cooperation with industry could be better developed. A change in approach is required to convince industry to use the services of marine stations and related research institutes.

6.3 European Infrastructure for Translational Medicine

European Infrastructure for Translational Medicine¹⁷ (EATRIS) is a European translational distributed research infrastructure that facilitates public-private partnerships in the life sciences. It has been on the ESFRI Roadmap since 2006, and an ERIC since 2013. EATRIS ERIC is supported by 14 countries (Bulgaria, Croatia¹⁸, Czech Republic, Finland, France, Italy, Latvia¹⁹, Luxembourg, Netherlands, Norway, Portugal, Slovenia, Spain and Sweden). EATRIS has successfully partnered with industry to initiate various projects, including those related to COVID-19 research. EATRIS builds its operations by developing access to the EATRIS

¹⁶ RI-VIS is a Horizon 2020 funded project designed to increase the visibility of European research infrastructures (RIs) to new communities in Europe and beyond. See <https://ri-vis.eu/network/rivis/home>.

¹⁷ See <https://eatris.eu/>.

¹⁸ Has a status of observer country.

¹⁹ Has a status of observer country.

infrastructure for industry, fostering public-private partnerships, and resulting in successful project initiation for various companies. One of its most successful partnerships is the Translational Molecular Imaging Hub, a joint venture between EATRIS, GlaxoSmithKline, and five EATRIS member institutions. This Hub has produced several preclinical and clinical projects with great translational potential and has benefited the participating institutions by providing access to expertise and resources from a global top 10 pharma company.

6.3.1 Cooperation with industry and other entities

Companies engage with EATRIS in a number of ways, including through partnering meetings, the use of industry consultants, and public-private partnerships. For example, the annual report for the year 2020²⁰ shows that EATRIS held 113 partnering meetings with industry.

EATRIS has therefore successfully developed access to the EATRIS infrastructure for industry, fostering public-private partnerships. This has resulted in successful project initiation for various companies, with their industry portfolio now including multiple European and global Small and Medium-sized Enterprises (SMEs). They have also formed long-term partnerships with big pharma companies.

Notable partnerships include one with GlaxoSmithKline. EATRIS has worked with GlaxoSmithKline (GSK) on the development of the Translational Molecular Imaging Hub, which is a novel international public-private partnership between EATRIS, GSK, and five EATRIS member institutions. The Hub aims to support the growth of life science industry and its manufacturing capabilities and bridge the gap from discovery to industrialisation. It enables translational research collaboration given the range of projects (preclinical, clinical, multi- and single-site) and involvement of industry and academic partners. EATRIS continues to operate as a central point of contact for the Hub partners and provides legal and operational support. Other companies that directly or indirectly work with EATRIS are: AstraZeneca; Boehringer Ingelheim; Bristol-Myers Squibb; Eli Lilly; Merck; Novartis; Pfizer; Roche and Sanofi.

In addition to the activities described above, EATRIS is involved in a variety of projects that involve for-profit or public entities or promote private-public partnerships. Some of the most notable are Beyond 1 Million Genomes²¹ (B1MG), The iNEXT-Discovery²², European Network of Research Infrastructures and Industry for Collaboration²³ (ENRIITC) and the EATRIS-Pus project²⁴.

- B1MG project aims to make it easier to share human health data around Europe. It will support the European Union's 1+ Million Genomes Initiative, which aims to provide

²⁰ See the annual report <https://eatris.eu/wp-content/uploads/2021/07/EATRIS-2020-Annual-Report.pdf>.

²¹ See <https://b1mg-project.eu/> and <https://cordis.europa.eu/project/id/951724>.

²² See <https://inext-discovery.eu/> and <https://cordis.europa.eu/project/id/871037>.

²³ See: <https://enriitc.eu/> and <https://cordis.europa.eu/project/id/871096>.

²⁴ See <https://eatris.eu/projects/eatris-plus/> and <https://cordis.europa.eu/project/id/871096>.

access to at least one million sequenced genomes in the EU by 2022. Although EATRIS has a key role, Legal Pathways, Hartwig Medical Foundation, DTL network are for-profit or public private entities that are involved in the project.

- ENRIITC aims to establish a sustainable European network of Industrial Liaison and Contact Officers which enables mutual learning, mapping of collaboration potential between RIs and industry, development and refining of strategies and best practices to foster these collaborations, raising awareness among industry for collaboration opportunities at research infrastructures, and demonstrating impact. EATRIS staff also participated in an industry mapping survey yielding an extensive report, in preparation of a step-by-step best practice guide for organising brokerage events and in making plans for a series of training webinars and interactive meetings.
- The iNEXT-Discovery project is bringing together structural biology facilities of various life science infrastructures in medicinal chemistry, translational medicine, biological imaging, and food research, to facilitate the use of structural biology resources and expertise across Europe, scientific disciplines and research sectors. It hosts an industry access portal where various proposals are reviewed by expert panels, before access to the facilities is granted to the private companies.
- EATRIS-Plus is a comprehensive sustainability project that involves strategic stakeholder engagement, with the aim to increase EATRIS industry and international collaborations, as well as provide training opportunities to the EATRIS research community and beyond. To support these goals, the planning started for the first EATRIS-Plus Summer School in Personalised Medicine and the Public Private Partnerships Best Practices workshop.

In other words, EATRIS is involved with industry in several projects that together aim to make it easier to share human health data around Europe (e. g. B1MG); to establish a sustainable European network of Industrial Liaison and Contact Officers to facilitate collaborations between industry and research institutes (e. g. ENRIITC project); to increase EATRIS industry and international collaborations, as well as provide training opportunities to the EATRIS research community and beyond (e. g. EATRIS-Plus).

6.3. 2 Summary

EATRIS is a European translational research infrastructure that facilitates public-private partnerships in the life sciences. EATRIS cooperates with industry in multiple ways, including facilitating public-private partnerships, providing access to its infrastructure for industry research projects and hosting an Innovation Hub in partnership with GlaxoSmithKline. There are a number of ways in which companies can engage with EATRIS, including partnering meetings, the use of industry consultants and public-private partnerships. A good example is the Translational Molecular Imaging Hub that aims to support the growth of life science industry and its manufacturing capabilities, and bridge the gap from discovery to industrialisation. EATRIS also provides services for companies engaged in COVID-19 research. Their industry portfolio now includes multiple European and global Small and Medium-Sized Enterprises (SMEs) and several long-term partnerships, including with big pharma.

EATRIS plans to continue its efforts to build public-private partnerships and to facilitate translational research collaboration with industry and academic partners.

6.4 Central European Research Infrastructure Consortium

Central European Research Infrastructure Consortium²⁵ (CERIC) is a multidisciplinary research infrastructure for basic and applied research in all fields of materials, biomaterials and nanotechnology. CERIC is also an ERIC, integrating and providing open access to some of the most advanced analytical facilities in Europe to help science and industry advance in all fields of materials, biomaterials and nanotechnology, with a focus on energy materials and life sciences. Located in 8 countries (Austria, Croatia, Czech Republic, Hungary, Italy, Poland, Romania and Slovenia), it is open to researchers from all over the world. It offers a single access point to state-of-the-art facilities and techniques based on the use of electrons, ions, neutrons and photons. Each Member Country contributes to CERIC a high-quality Partner Facility (PF), which is available to researchers on the basis of a positive review from the International Scientific and Technical Advisory Committee (ISTAC) of CERIC.

6.4.1 Cooperation with industry and other entities

CERIC²⁶ provides commercial and industrial services to businesses and researchers in order to support research and development activities related to the characterisation and modification of materials. This includes access to instrumentation, contract research, training and support for spin-off and start-up businesses. CERIC supports industrial users by providing access to its complementary instruments and techniques. Contract research is possible either by taking part in already existing projects of CERIC and/or of its Partner Facilities, or by joining new collaborative projects with CERIC and/or its Partners.

Industry has access to the equipment through a variety of ways, including contracting CERIC for specific research projects, attending training courses on the use of equipment and through the innovation marketplace. Furthermore, CERIC relies on private investment for some of its activities, such as commercial services and training.

For example, throughout 2020, CERIC continued the capacity building activity for industrial liaison and technology transfer (IL/TT) staff of its PFs and other RIs, through open online webinars carried out by international experts, with a focus on IL&TT-related topics.

In relation to industrial usage of the CERIC Partner Facilities via open access in 2020, 8% of the proposals received were – according to the users – projects with industrial interest. Four percent of total accesses were related to those industrial access requests. In terms of publications, 9% of the articles released in 2020 were related to industry. Such data take into account publications that include authors affiliated to a company and those that come from industrial proposals.

²⁵ See <https://www.ceric-eric.eu/>.

²⁶ See the annual report https://www.ceric-eric.eu/wp-content/uploads/2021/06/CERIC_Report2020.pdf.

CERIC also kept working on direct commercial activities, and in 2020 signed an agreement for measurements and data analysis services involving the scientific staff at CERIC in the Pharmaceutical sector, which led to a direct income for CERIC of EUR 15,750.

CERIC plans to continue its support for industrial liaison and technology transfer activities through webinars and other online events. It also plans to continue to enlarge its network through various activities aimed at the business sector. In addition, CERIC plans to sign agreements with more Representing Entities in order to foster industry's involvement and contribute to their technology transfer activities.

6.4.2 Summary

CERIC provides a platform for showcasing the innovative solutions that can be provided to industry and research entities working with the development of new materials. It offers a wide range of services to support the research and development activities of commercial and industrial users, including access to instrumentation, contract research, training and consultation on innovation projects. CERIC plans to continue its support for industrial liaison and technology transfer activities through webinars and other online events. It also plans to continue to enlarge its network through various activities aimed at the business sector.

6.5 Consortium of European Social Science Data Archives

The Consortium of European Social Science Data Archives²⁷ (CESSDA) is a distributed RI serving as a large-scale, integrated, and sustainable platform for data services relevant to the Social Sciences. It has been in the ESFRI Roadmap since 2006 and was recognised as ESFRI Landmark in 2016. Since 2017, it has an ERIC status. CESSDA brings together social science data archives across Europe, with the aim of promoting the results of social science research and supporting national and international research and cooperation. The main objectives of CESSDA are therefore to support the development of the European Union data infrastructure, to promote the sharing of data and to provide access to data for research purposes. Each member assigns a national data service that takes care of data curation and data services. These CESSDA Service Providers act as trusted repositories and demonstrate their reliability to researchers as well as national and international research funders.

Although CESSDA²⁸ does not cooperate with industry directly, it is indirectly involved in several projects that include private for-profit entities such as: Social Sciences & Humanities Open Cloud²⁹ (SSHOC); Transforming Research through Innovative Practices for Linked Interdisciplinary Exploration³⁰ (TRIPLE); Enhanced migration measures from a

²⁷ See <https://www.cessda.eu/>.

²⁸ See CESSDA annual report https://static-archive.cessda.eu/content/download/6271/66275/file/CESSDA_Annual_Report_2020.pdf and CESSDA strategy <https://static-archive.cessda.eu/content/download/4260/48215/file/CESSDA%20strategy%202018-2022.pdf>.

²⁹ See <https://sshopencloud.eu/> and <https://cordis.europa.eu/project/id/823782>.

³⁰ See <https://project.gotriple.eu/> and <https://cordis.europa.eu/project/id/863420>.

multidimensional perspective³¹ (HumMingBird); Historical high-quality company-level data for Europe³² (EURHISFIRM).

- The SSHOC is a project that aims to create a cloud-based infrastructure for research data. The project will create a platform where data is easily accessible and FAIR, and will also provide tools and training to researchers so that they can use the platform effectively.
- TRIPLE is a project that is striving to create a discovery solution for the social sciences and humanities. This solution will allow researchers to explore, find, access, and reuse materials such as literature, data, projects and researcher profiles at a European scale. This will help to address the fragmentation of SSH research and overcome obstacles to interdisciplinary research.
- HummingBird is project that is working to improve our understanding of migration. The project is taking a multidimensional perspective on migration, looking at patterns, motivations, and new geographies. Additionally, HummingBird is striving to calculate population estimates, determine emerging and future trends and identify possible future implications of today's policy decisions.
- EURHISFIRM is a consortium of leading European universities and research institutions with a long tradition in historical research. The consortium has a strong track record in data collection, data merging and data extraction. It has also developed innovative tools to spark the "Big Data" revolution in historical social sciences.

The main future objectives of CESSDA are to support the re-use of data for research purposes, to improve the quality and harmonisation of data and to increase the visibility of data resources. CESSDA plans to increase the involvement of data producers and data users in the consortium, including professionals and citizen scientists as data re-users, and national statistical offices, private companies, governments as data producers.

6.5.2 Summary

Although CESSDA does not cooperate with industry directly, it is indirectly involved in several projects that include private for-profit entities. The main future objectives of CESSDA are to support the re-use of data for research purposes, to improve the quality and harmonisation of data and to increase the visibility of data resources.

³¹ See <https://hummingbird-h2020.eu/> and <https://hummingbird-h2020.eu/>.

³² See <https://eurhisfirm.eu/> and <https://cordis.europa.eu/project/id/777489>.

7 Discussion of the main findings

Our initial assumption that there exists lively cooperation between the RIs and industry was confirmed in the survey as well as when looking at some of the ERICs. In the survey, only 17% of our respondents do not have contacts with industry and nearly half of them (49%) regularly cooperate. As expected, the liveliest cooperation is at the national level (74%), where in the cases of distributed RI, a number of different types of contacts are established. These can be cooperation in R&D projects, aiding SME, joint meetings to discuss the programmes, even deliberations on the purchase of equipment. What can be singled out and is in our view of extreme importance is the identified cooperation in research projects, be it funded through EU or through other sources. This shows that the industry sees RI as a high-quality partner in joint research projects, in spite of so often quoted “different language”. Obviously, the available equipment and data prove to be valuable assets in joint research projects and thus open door to cooperation.

More problematic is the information regarding economic impact of the cooperation, especially since as we indicated earlier, much of it is carried out at the national and not central level. It seems that reporting the income derived from the industry would only be possible, should such information be regularly collected with a common guideline on what to consider and what not. This is demonstrated in a wide variety of answers, in which estimates of the financial contribution derived from the cooperation with industry differ from 5% to as much as xx percent of the total income of a Landmark/ ERIC.

Especially rich is the information on the services offered to industry, where besides the standard one of industry using the research equipment available in RIs, many highly innovative and creative ways of the usage of research infrastructures have been identified. Among the answers we find things like exchange of staff, shared technology or instrument development as well as jointly providing platforms to engage with stakeholders and users. The replies suggest that forms of cooperation are numerous, and services developed in this cooperation suit the needs of both partners, the RIs and industry. Joint research projects stand out as a form of cooperation in all of the RI, examined more closely (Chapter 6).

The interest and the existing intensity of cooperation are also expressed in the activities of the RIs to systematically promote the cooperation. As many as 72% of respondents stimulate cooperation and use various means to do so. Let us single out few activities which suggest that RIs are highly active in trying to attract industry, despite their primary focus on basic research. These include establishment of dedicated offices for cooperation with business partners, involving representatives from business in advisory boards, organisation of special industry days as well as co-innovation plans. These are just a few of the activities – full listing is available in point 5.5. of this report. The vast spectrum of services shows that RIs treat cooperation as beneficial and appropriate activity that complements their basic tasks as RI, rather than takes

away their attention from the main responsibilities. It is precisely their successful performance in their primary role that makes them interesting to business, and coupled with their own benefits, the partnerships develop.

Somewhat problematic is the issue of finances, both at the level of the head office and at the level of national entities where most of the cooperation takes place. At the level of the head office, in 48% of the cases the revenue derived from the cooperation represents less than 10% of total revenue, and only in the case of a single Landmark the income derived from cooperation is above 20%.

On the other hand, more than 20% of total revenue is the income of 8% of national entities, with another 8% earning between 10-20% of their income from cooperation with the industry. For 25% of the national entities the revenue from the cooperation is less than 10%.

The answers gathered in the category “other” partly clarify the difficulty of responding to this question, both at the level of headquarters as well as at the level of national entities in the cases of distributed landmarks. There seems to be uneasy feeling about reporting on the income generated by the cooperation with the industry, which we attribute to the specific legal position of ERICs, which also affects the behaviour of the Landmarks. Since primary task of RIs is, in accordance with the definition, to provide support to users (research community), for which they receive EU/national funding, their money-making role is running counter to this. That is why some have responded that they offer services to industry for free or that the revenue is really small and not even specially recorded. The financial benefit of cooperation with the industry is indirect – through jointly applying for the EU financed R&D projects. This, on the other hand, may represent a more important share of their overall budget. We believe that this issue deserves a closer examination as well as a clearer set of rules on generating as well as reporting the income derived from the cooperation with the industry. The current situation places Landmarks in a difficult position, especially within the on-going discussion on establishment of TIs. For TIs, earning income from the industry is expected, while the RIs are often in a position to provide adequate service to industry as well, but are unsure on how to approach such cooperation. That the issue is pertinent is reflected in the plans RIs have: to our question on the plans for expansion of the cooperation, 92% of respondents answered positively. Or, to put it differently, the replies we received, only one landmark out of 24 stated that they do not plan to expand their cooperation with the industry. The explanation was also provided: the nature of the RI is such that it does not allow commercial use of data. So, if the majority of Landmarks plan to expand their cooperation, the basic outlines of the business model for such cooperation should be prepared to help the landmarks address this issue. This is reflected in the long list of suggestions and opinions with regard to RIs cooperation with industry provided by the respondents. It can be interpreted as an indication of the importance of the topic.

Obviously, the Landmarks face several issues which, if properly addressed, could smooth their cooperation with the industry and society. We tried to group their comments with regard to the various aspects of the cooperation:

- A) Development of an appropriate legal framework and business model:
- develop solutions and regulations for cooperation with industry at the level of RIs;
 - identify legal and contractual framework and collaboration processes that can be harmonised across distributed sites;
 - there are no legal solutions at the EU level for the mutual use of research infrastructures of academia and the private sector;
 - there are no specific regulations related to cooperation with industry (at least within some RIs).
- B) Means to promote the cooperation
- find companies potentially interested in developing contacts with the RI communities;
 - increase the visibility of the services offered by RIs;
 - an advisory committee established at the RI level could support strategic activities, such as the development of the legal basis for the RI cooperation with the private sector;
 - appointment of an industry contact officer at the level of the national nodes (where most interactions with private sector happen);
 - sharing of good models for setting up co-development and best practices in sustaining cooperation (both with large companies and SMEs);
 - extra support to develop sample environments, procedures/services for industry needs;
 - support for data analysis that go beyond simply doing an experiment and generating data (industry needs such extended support in contrast to academia);
 - in-kind as a concept is an interesting way of industry cooperation;
 - networking with other academic groups that develop interactions with the private sector would increase the possibilities for building interactions with industry.
- C) Role of the EU/EC
- co-creation and co-innovation platforms and avenues should be further explored and facilitated by suitable funding schemes (EU funding to facilitate this form of activity, such as the infra-tech call, has been greatly appreciated by the RIs and the industry partners);
 - having EU portal for showcasing the services that are tailored to the industry
 - having EU organisation able to present EU RIs collectively as reliable and successful in dealing with the industry
 - the EC could probably contribute by promoting the potential role of RIs
 - extra support for SME engagement which should be fully funded via EC/EIC
- D) Other:
- conduct a study that would explore the perceived attractiveness of the RI services to the private sector (with a focus on potential offers linked to scientific domains);

- for distributed research infrastructures a fully centralised approach to cooperation with industry may not always be applicable, as the nodes are embedded in their own organisation's legal and contractual framework and collaborations may need to be approached on a one-by-one basis (this may sometimes hinder scaling of collaboration)
- it is fundamental to demonstrate to the industry long-term sustainability for building stable and long-lasting relationships
- some RIs are very active in collaborating with and supporting industry but do so on the free-of-charge basis (the assumption of the questionnaire seems to be that the collaboration with the industry should be primarily about bringing funding to the infrastructure);
- first mission of RIs is to support research and more indirectly to contribute to societal challenges, but it is often unclear how much emphasis on developing cooperation with industry is expected and why;
- the digitalisation of society and the role of AI have brought a lot of potential for new roles of pan-European data services, but data RIs are relatively new and not always very visible for non-academic organisations;
- there is a need for a flexible approach to what "publishing" means so work with industry can be at least semi-confidential even if funded via EC support.

Collected comments provide ample evidence that there is a serious need among landmarks for intensified analytical work in the area of RIs and industry cooperation. At the policy level, there is a need to clear the question of emphasis on developing cooperation with industry: should RIs actively promote such a cooperation? What should be the main purpose: provide business the regular services which are offered as a basic standard by RIs free of charge or look systematically for content which would be more tailor-made for the industry and therefore also charge for the services?

A pressing issue when discussing RIs' cooperation with industry is the formation of Technology Infrastructures. Most of RIs feel that more discussion is needed to assure that the two infrastructures complement each other, and that no artificial definition is produced, creating a barrier in the transversal research and innovation pipeline. There are recognised potential benefits of TI for industry, but it is also necessary to acknowledge the existing cooperation of RIs with industry. It was pointed out in the comments that some of the distributed RIs already have TIs as participating institutions, providing joint RD&I services to the RI user community. RIs often conduct high TRL development and validation, just as well as some TIs conduct lower TRL level research.

The comments suggest that there is a need to better define the role of TIs and create definitions for RIs and TIs that reflect reality³³. This can only be done on the basis of

³³ This comment was related to the definition, provided in the Viscido S. et al (2022): „Research infrastructures focus on lower technology readiness levels (TRLs), their users are researchers primarily from public bodies such as universities and research organisations and they are predominantly sustained through public support. Technology infrastructures, at higher TRLs, are industry- (including SME-) focused and therefore complementary

comprehensive mapping exercise and careful consideration of the effects of policy measures related to the future role of the RIs as well as TIs. The landscape analysis, such as traditionally practiced in the RI community, should consider both potential infrastructures to identify the gaps and make sure to avoid overlaps, and a need for new structures that is clearly established.

8 Conclusions and recommendations for further work

The results of a preliminary research on the cooperation of RIs with industry show that an intensive cooperation is already being developed, and the landmarks view this as an integral part of their activity. The suggestions to improve cooperation, identified in an earlier work of the European Commission (2017), have found the way in the operations of RIs, that cite engagement of representatives of industry in their Advisory Boards, dedicated training and exchange schemes and creation of special contact points for cooperation with industry (see recommendations in EC WP 2017: 52)³⁴.

There is still a need to explore in more detail what could be the optimal business model for the cooperation. There are several examples of good practices which could be systematically documented and shared among landmarks. The same can be said when looking at the variety of services offered by some landmarks to business community. There is no doubt that sharing of good practices could facilitate and promote further development of the cooperation.

An open question remains in connection with the legal forms of the cooperation as well as the issue of financial arrangements. Again, a closer examination of the existing forms is needed and an open discussion at ESFRI level initiated.

Several possible activities at the level of EC were also proposed by the respondents to the survey: from a platform, listing services provided by the RIs to a pro-active promotion of the role RIs can play in cooperation with industry. One of such proposals was also to help SMEs access the RIs' services by co-financing the costs of tailor-made services.

A long list of activities the RIs have identified to promote the cooperation with industry deserve policy attention. A dedicated platform, where such ideas and experiences could be shared, is one of the ways to consider these suggestions and further stimulate the cooperation.

In the draft survey, several additional aspects were not addressed. One such dimension is a large hidden industrial use performed through academic users, estimated to be above 20%. (EC, 2017: 54). This indirect form of cooperation is another topic worth further analysis.

We also could not include the views of industrial partners. To fully assess the importance of the cooperation, it would be necessary to explore how industrial partners see the cooperation, its benefits, barriers and future potential. Such an analysis would be beneficial not only for the

³⁴ Sustainable European Research Infrastructures – A call for action COMMISSION STAFF WORKING DOCUMENT – Long-term sustainability of Research Infrastructures; © European Union, 2017; [swd-infrastructures_323-2017.pdf \(europa.eu\)](https://ec.europa.eu/info/sites/default/files/2017-11-23-sw-d-ri-323-2017.pdf)

further expansion of cooperation of RIs with industry but also as an additional input in the on-going discussion of the establishment of TIs.

To conclude, preliminary research on the topic of industry and RIs' cooperation identified that there are several topics which deserve further investigation to provide a more qualified set of findings, leading to policy recommendations. At least two levels of research should be conducted:

- at the level of individual research infrastructures, which has now been limited to examination of the web pages and annual reports and should be complemented with interviews with the representatives of the RI;
- at the level of business entities, to assess their experience in cooperation with RI.

ANNEX: Survey on cooperation with industry

Dear Madam, Sir, the questionnaire on the next pages addresses the cooperation of RIs with industry and would enable ESFRI to learn more about the scope and size of the services offered. We kindly invite you to fill in the questionnaire. The questionnaire is anonymous and it will take you only a few minutes. We appreciate your cooperation! In case you need additional information/clarification of the questions, please feel free to write to us: esfri@fdv.uni-lj.si

Q1 - Does your ERIC in any way cooperate with industry?

- Yes, regularly
- Yes, occasionally
- No

(1) Q1 = [1] or Q1 = [2]

Q2 - Is this cooperation at the level:

Multiple answers are possible

- Of EU ERIC
- Through the national entities (not visible in the ERIC accounts- for example, part of equipment at universities)
- Other:

(2) Q2 = [Q2a]

Q3 - What type of cooperation do you have at the level of ERIC head office, and what is the share of funds (reflected in the annual accounts of an ERIC)?

	Yes	No	Share of funds (%)
Research cooperation - funded through an EC funded project	<input type="radio"/>	<input type="radio"/>	
Research cooperation - funded through other sources	<input type="radio"/>	<input type="radio"/>	

Contract research (funded by a company)	<input type="radio"/>	<input type="radio"/>	
Use of the equipment/data	<input type="radio"/>	<input type="radio"/>	
Other	<input type="radio"/>	<input type="radio"/>	

IF (3) Q4e = [1]

Q6 - If other, please explain:

(4) Q2 = [Q2b]

Q7 - What type of cooperation do national nodes have, using the same infrastructure, and what is the estimated share of funds (not reflected in the ERIC accounts)?

	Yes	No	Share of funds (%)
Research cooperation - funded through an EC funded project	<input type="radio"/>	<input type="radio"/>	
Research cooperation - funded through other sources	<input type="radio"/>	<input type="radio"/>	
Contract research (funded by a company)	<input type="radio"/>	<input type="radio"/>	
Use of the equipment/data	<input type="radio"/>	<input type="radio"/>	
Other	<input type="radio"/>	<input type="radio"/>	

IF (5) Q8e = [1]

Q10 - If other, please explain:

(1) Q1 = [1] or Q1 = [2]

Q11 - What services are offered to the industry?

Multiple answers are possible

- Access to facilities
- Access to data
- Other:

(1) Q1 = [1] or Q1 = [2]

Q12 - Do you systematically stimulate such cooperation?

- Yes
- No

IF (6) Q12 = [1]

Q13 - Can you indicate, how you stimulate such cooperation?

(1) Q1 = [1] or Q1 = [2]

Q14 - How important is such cooperation financially for EU ERIC at the level of head office?

- Less than 10% of total revenue
- Between 10-20% of total revenue
- More than 20% of total revenue
- Other:

(1) Q1 = [1] or Q1 = [2]

Q15 - How important is such cooperation financially for the national representing entities of ERIC?

- Less than 10% of total revenue
- Between 10-20% of total revenue

- More than 20% of total revenue
- Other:

(1) Q1 = [1] or Q1 = [2]

Q16 - How important it is as % of ERIC head office revenue?

- Less than 10% of total revenue
- Between 10-20% of total revenue
- More than 20% of total revenue
- Other:

(1) Q1 = [1] or Q1 = [2]

Q17 - Does industry co-invest in research equipment of RI?

- yes
- no

IF (7) Q17 = [1]

Q18 - How often does this happen?

- Annually
- Bi-annually
- Less often

(1) Q1 = [1] or Q1 = [2]

Q19 - Is there any other direct private investment in RI, in addition to the ones you have already mentioned?

- yes
- no

IF (8) Q19 = [1]

Q20 - Can you please explain those investments?

(1) Q1 = [1] or Q1 = [2]

Q21 - Are your institution, equipment, data or services accessible through your access, included in initiatives such as test beds, pilot lines, demonstrators, testing facilities?

- Yes
 No

IF (1) Q1 = [1] or Q1 = [2]

Q22 - Do you plan further expansion of such cooperation with industry within next years (or specific period, like 2021-2027):

- Yes
 No
 Don't know

IF (1) Q1 = [1] or Q1 = [2]

Q23 - Any other suggestion/question/opinion with regard to RIs cooperation with industry?

(9) Q1 = [3]

Q24 - What are the reasons you do not cooperate with industry?

Multiple answers are possible

- There is no interest from industry
 We do not have enough expertise
 No added value for the industry
 Other:

Q25 - Could you identify any of the existing TIs in your domain with which you already cooperate or plan to cooperate:

(EC is in the process of establishing Technology Infrastructures (TI). According to the EC (SWD(2019) 158 final), technology infrastructures are understood as facilities, equipment, capabilities and support services required to develop, test and upscale technology to advance from validation in a laboratory up to higher TRLs prior to competitive market entry. They can have public, semi-public or private status. Their users are mainly industrial players, including SMEs, which seek support to develop and integrate innovative technologies towards commercialisation of new products, processes and services, whilst ensuring feasibility and regulatory compliance.)

Already cooperate:

Plan to cooperate:

Q26 - Could you identify any need to establish new TIs in your domain:

Q27 - Any other comment with regards to TI: _____